REMARKS

This is intended as a full and complete response to the Office Action dated October 17, 2005, having a shortened statutory period for response set to expire on January 17, 2006. Please reconsider the claims pending in the application for reasons discussed below.

In the specification, paragraph [0031] has been amended to correct a typographical error. Applicants submit that the changes made herein do not introduce new matter.

Applicants note that a preliminary amendment was previously filed on July 7, 2005, and was received by the Patent Office, as it is shown on PAIR. Applicants respectfully request confirmation of the entry of the preliminary amendment.

Claims 1-23 remain pending in the application and are shown above. Claims 1-23 are rejected. Reconsideration of the rejected claims is requested for reasons presented below.

Claims 1, 7, and 15 have been amended to more clearly recite the claimed subject matter. As amended, claims 1, 7, and 15 specify that the first and second patterns in the amorphous carbon layer are transferred through the substrate at the same time (as shown in Figures 2E-2F). Claim 7 has also been amended to clarify that the photoresist is deposited on the non-carbon based layer after the first pattern is defined in the non-carbon based layer and in the amorphous carbon layer. Claim 15 has also been amended to clarify that the second non-carbon based layer is deposited over the amorphous carbon layer after the first pattern is defined in the amorphous carbon layer. Applicants submit that the changes made herein do not introduce new matter.

Claims 1, 3, and 4 stand rejected under 35 U.S.C § 103(a) as being unpatentable over *Grill, et al.* (U.S. Patent No. 6,140,226) in view of *Bonser, et al.* (U.S. Patent No. 6,764,949). The Examiner states that *Grill, et al.* discloses a method comprising depositing a mask layer (78) on a substrate, defining a first pattern in the mask layer, depositing a layer of photoresist on the mask layer, patterning the photoresist, transferring the pattern in the photoresist through the mask layer to form a second

pattern in the mask layer, and transferring the first and second patterns in the substrate. The Examiner acknowledges that *Grill, et al.* does not disclose that the mask layer is amorphous carbon. The Examiner asserts that it would have been obvious to use *Bonser, et al.'s* amorphous carbon hardmask as *Grill, et al.'s* mask layer. Applicants respectfully traverse the rejection.

The Examiner cites column 9, lines 58-67, column 10, line 1, and Figures 7G-7I of *Grill, et al.* as describing transferring first and second patterns in the mask layer through the substrate. Applicants note that while Figures 7G-7I show one pattern in mask layer 78 being transferred through layer 76 and then through layers 12 and 10, Figures 7G-7I do not show a second pattern in mask layer 78 being transferred through any layers of the stack. While column 9, lines 58-67, column 10, line 1 refer to first and second patterns between transferred through layers of the stack, column 9, lines 58-67, column 10, line 1 and Figures 7G-7I do not describe or show two different patterns in mask layer 78 that are transferred through a substrate at the same time. Figures 7G-7I show one pattern, a trench pattern, in mask layer 78 that is transferred through different layers (76 and 12) in Figures 7H and 7I and another pattern, a via pattern, that is in layer 76 and layer 12 in Figure 7G, but not in mask layer 78, that is transferred through other layers (10 and 8) in Figures 7H and 7I. Thus, Applicants respectfully submit that *Grill, et al.* does not teach or suggest transferring first and second patterns in an amorphous carbon layer through a substrate at the same time. Applicants further submit that *Bonser, et al.*, individually or in combination with *Grill, et al.*, does not teach, show, or suggest transferring first and second patterns in an amorphous carbon layer through a substrate at the same time.

Thus, *Grill, et al.* in view of *Bonser, et al.* does not teach, show, or suggest a method of etching a substrate, comprising depositing an amorphous carbon layer on the substrate, defining a first pattern in the amorphous carbon layer, depositing a layer of photoresist on the amorphous carbon layer, patterning the photoresist, transferring the pattern in the photoresist through the amorphous carbon layer to form a second pattern in the amorphous carbon layer, and then transferring the first and second patterns in the amorphous carbon layer through the substrate at the same time, as recited in claim 1.

Applicants respectfully request withdrawal of the rejection of claim 1 and of claims 3-4, which depend thereon.

Claims 2, 5, and 6 stand rejected under 35 U.S.C § 103(a) as being unpatentable over *Grill, et al.,* in view of *Bonser, et al.,* and in further view of *Latchford, et al.* (U.S. Patent Appl. Pub. No. 2002/0001778). Applicants respectfully traverse the rejection. As discussed above, *Grill, et al.* in view of *Bonser, et al.* does not teach or suggest transferring first and second patterns in an amorphous carbon layer through a substrate at the same time. Applicants further submit that *Latchford, et al.*, individually or in combination with *Grill, et al.* and *Bonser, et al.*, does not teach or suggest a method comprising transferring first and second patterns in an amorphous carbon layer through a substrate at the same time. Thus, *Grill, et al.,* in view of *Bonser, et al.,* and in further view of *Latchford, et al.* does not provide or suggest all of the limitations of claims 2, 5, and 6, which include the limitations of claim 1. Applicants respectfully request withdrawal of the rejection of claims 2, 5, and 6.

Claims 7, 9-10, 12-13, 15-18, 20, and 21 stand rejected under 35 U.S.C § 103(a) as being unpatentable over *Grill, et al.,* in view of *Bonser, et al.,* and in further view of *Wolf*, Silicon Processing for the VLSI Era, Vol. 4, Lattice Press (2002). Applicants respectfully traverse the rejection.

Like claim 1, independent claims 7 and 15 recite a method of etching a substrate comprising defining a first pattern in an amorphous carbon layer, defining a second pattern in the amorphous carbon layer, and then transferring the first and second patterns in the amorphous carbon layer through the substrate at the same time. As discussed above, *Grill, et al.* in view of *Bonser, et al.* does not teach or suggest transferring first and second patterns in an amorphous carbon layer through a substrate at the same time. Applicants further submit that *Wolf*, individually or in combination with *Grill, et al.* and *Bonser, et al.*, does not teach or suggest a method comprising transferring first and second patterns in an amorphous carbon layer through a substrate at the same time.

Thus, *Grill, et al.,* in view of *Bonser, et al.,* and in further view of *Wolf* does not teach, show, or suggest a method of etching a substrate, comprising depositing an amorphous carbon layer on the substrate, depositing a non-carbon based layer on the

amorphous carbon layer, defining a first pattern in the non-carbon based layer and in the amorphous carbon layer, depositing a layer of photoresist on the non-carbon based layer after the first pattern is defined in the non-carbon based layer and in the amorphous carbon layer, patterning the photoresist, transferring the pattern in the photoresist through the non-carbon based layer and the amorphous carbon layer to form a second pattern in the amorphous carbon layer, and transferring the first and second patterns in the amorphous carbon layer through the substrate at the same time, as recited in claim 7. Applicants respectfully request withdrawal of the rejection of claim 7 and of claims 9-10 and 12-13, which depend thereon.

Furthermore, *Grill, et al.,* in view of *Bonser, et al.,* and in further view of *Wolf* does not teach, show, or suggest a method of etching a substrate, comprising depositing an amorphous carbon layer on the substrate, depositing a first non-carbon based layer on the amorphous carbon layer, defining a first pattern in the non-carbon based layer and in the amorphous carbon layer, depositing a second non-carbon based layer over the amorphous carbon layer after the first pattern is defined in the amorphous carbon layer, depositing a layer of photoresist on the second non-carbon based layer, patterning the photoresist, transferring the pattern in the photoresist through the second non-carbon based layer and the amorphous carbon layer to form a second pattern in the amorphous carbon layer, and transferring the first and second patterns in the amorphous carbon layer through the substrate at the same time, as recited in claim 15. Applicants respectfully request withdrawal of the rejection of claim 15 and of claims 16-18, 20, and 21, which depend thereon.

Claims 8, 11, 14, 19, 22, and 23 stand rejected under 35 U.S.C § 103(a) as being unpatentable over *Grill, et al.,* in view of *Bonser, et al.,* in view of *Wolf*, and in further view of *Latchford, et al.* Applicants respectfully traverse the rejection.

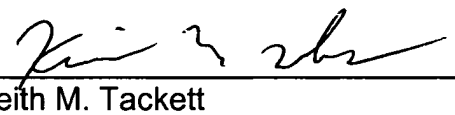
As discussed above, none of *Grill, et al., Bonser, et al., Wolf*, and *Latchford, et al.* teach or suggest a method comprising transferring first and second patterns in an amorphous carbon layer through a substrate at the same time. Applicants further submit that the combination of *Grill, et al., Bonser, et al., Wolf*, and *Latchford, et al.* does not teach or suggest a method comprising transferring first and second patterns in an amorphous carbon layer through a substrate at the same time. Thus, *Grill, et al.,* in

view of *Bonser, et al.*, in view of *Wolf*, and in further view of *Latchford, et al.* does not teach or suggest all of the limitations of claim 7, upon which claims 8, 11, and 14 depend. Furthermore, *Grill, et al.*, in view of *Bonser, et al.*, in view of *Wolf*, and in further view of *Latchford, et al.* does not teach or suggest all of the limitations of claim 15, upon which claims 19, 22, and 23 depend. Applicants respectfully request withdrawal of the rejection of claims 8, 11, 14, 19, 22, and 23.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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